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(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Tatsuya IGARASHI et al.

Application No.: 10/530,289 | Confirmation No.: 7753

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For: ORGANIC ELECTROLUMINESCENT DEVICE | Examiner: D. L. Garrett

DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Madam:

I, Toshihiro Ise, declare and say as follows:

I am named as a co-inventor of the above-identified application.

I have carried out additional comparative testing myself or under my supervision. Test procedures and results are shown below.

Additional Comparative Testing

Additional Comparative Examples 55-108 were prepared under the same concentration conditions as Example 8. The results of Additional Comparative Examples 55-108 are shown in the attached Table. Additional Comparative Examples 1-54 are the same as the examples provided with the Rule 132 Declaration filed on August 11, 2008. These examples are repeated in the attached Table for convenience. Some combinations of host materials disclosed in U.S. Patent Application Publication No. 2002/0125818 to Sato et al. (hereinafter, "Sato '818") are not effective to show the many examples where no luminescence was available. These results are shown as "No light emission."

The present invention uses carbazole compound (A-10) and arylamine compound (C-10) as a hole transporting host; imidazole compounds (ET-1, ET-2), triazine compound (A-28), aromatic hydrocarbon compounds (C-18 and C-22), and aluminum complex compound (B-68) as an electron transporting host; and homoleptic iridium complex (G-1) and heteroleptic iridium complex (G-2) as a phosphorescent material. Thus, many compounds are shown to be effective without limitation for the structure. As further support, inventive Additional Examples 3-26 were conducted to provide examples where the luminescent material, hole transporting layer material, electron transporting layer material, and cathode are changed and where the combination and concentration of the hosts are changed. These results are also shown in the attached Table.

As is apparent from the results shown in the attached Table, the devices of the Additional Comparative Examples provide bad performance in operation durability and external quantum efficiency.

The data already of record in the specification and the supplemental data submitted herewith demonstrate superior results of the claimed organic electroluminescent device over those of the cited references.

The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S. Code 1001 and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

By: Toshihiro Ise Date: Jun. 9, 2009

Dr. Toshihiro Ise

		External quantum efficiency	Operation durability @500cd/m
Additional Example1	ITO/CuPc(10)/NPD(50)/80%CBP+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	6.80%	1500h
Additional Comparative Example1	ITO/CuPc(10)/NPD(50)/80%H-34+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.10%	45h
Additional Comparative Example2	ITO/CuPc(10)/NPD(50)/80%H-4+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example3	ITO/CuPc(10)/NPD(50)/80%H-5+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.10%	38h
Additional Comparative Example4	ITO/CuPc(10)/NPD(50)/80%H-7+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example5	ITO/CuPc(10)/NPD(50)/80%H-8+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.20%	25h
Additional Comparative Example6	ITO/CuPc(10)/NPD(50)/80%H-10+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example7	ITO/CuPc(10)/NPD(50)/80%H-15+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example8	ITO/CuPc(10)/NPD(50)/80%H-20+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.10%	31h
Additional Comparative Example9	ITO/CuPc(10)/NPD(50)/80%H-23+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.30%	40h
Additional Comparative Example10	ITO/CuPc(10)/NPD(50)/80%H-30+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example11	ITO/CuPc(10)/NPD(50)/80%H-31+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example12	ITO/CuPc(10)/NPD(50)/80%CBP+10%H-34+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.10%	200h
Additional Comparative Example13	ITO/CuPc(10)/NPD(50)/80%CBP+10%H-4+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example14	ITO/CuPc(10)/NPD(50)/80%CBP+10%H-7+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example15	ITO/CuPc(10)/NPD(50)/80%CBP+10%H-23+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.30%	185h
Additional Comparative Example16	ITO/CuPc(10)/NPD(50)/80%H-40+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.60%	100h
Additional Comparative Example17	ITO/CuPc(10)/NPD(50)/80%H-47+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.30%	40h
Additional Comparative Example18	ITO/CuPc(10)/NPD(50)/80%H-50+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.20%	33h
Additional Comparative Example19	ITO/CuPc(10)/NPD(50)/80%H-51+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example20	ITO/CuPc(10)/NPD(50)/80%H-52+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example21	ITO/CuPc(10)/NPD(50)/80%H-56+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example22	ITO/CuPc(10)/NPD(50)/80%H-66+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.40%	86h
Additional Comparative Example23	ITO/CuPc(10)/NPD(50)/80%H-67+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.40%	80h
Additional Comparative Example24	ITO/CuPc(10)/NPD(50)/80%H-101+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	1.20%	
Additional Comparative Example25	ITO/CuPc(10)/NPD(50)/80%H-104+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	1.20%	
Additional Comparative Example26	ITO/CuPc(10)/NPD(50)/80%H-118+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example27	ITO/CuPc(10)/NPD(50)/80%H-139+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example28	ITO/CuPc(10)/NPD(50)/80%H-148+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example29	ITO/CuPc(10)/NPD(50)/80%H-132+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example30	ITO/CuPc(10)/NPD(50)/80%H-137+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example31	ITO/CuPc(10)/NPD(50)/80%H-202+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.10%	3h
Additional Comparative Example32	ITO/CuPc(10)/NPD(50)/80%H-204+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.50%	10h
Additional Comparative Example33	ITO/CuPc(10)/NPD(50)/80%H-213+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example34	ITO/CuPc(10)/NPD(50)/80%BCP+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example35	ITO/CuPc(10)/NPD(50)/80%OXD-7+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example36	ITO/CuPc(10)/NPD(50)/80%TAZ+10%TPBI+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example37	ITO/CuPc(10)/NPD(50)/80%CBP+10%BCP+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	1.30%	450h
Additional Comparative Example38	ITO/CuPc(10)/NPD(50)/80%CBP+10%OXD-7+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example39	ITO/CuPc(10)/NPD(50)/80%CBP+10%TAZ+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example40	ITO/CuPc(10)/NPD(50)/80%TAZ+10%BCP+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example41	ITO/CuPc(10)/NPD(50)/80%OXD-7+10%BCP+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example42	ITO/CuPc(10)/NPD(50)/80%H-10+10%BCP+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example43	ITO/CuPc(10)/NPD(50)/80%H-10+10%OXD-7+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example44	ITO/CuPc(10)/NPD(50)/80%H-10+10%TAZ+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example45	ITO/CuPc(10)/NPD(50)/80%H-34+10%BCP+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.10%	20h
Additional Comparative Example46	ITO/CuPc(10)/NPD(50)/80%H-34+10%OXD-7+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example47	ITO/CuPc(10)/NPD(50)/80%H-34+10%TAZ+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example48	ITO/CuPc(10)/NPD(50)/80%H-42+10%H-43+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example49	ITO/CuPc(10)/NPD(50)/80%H-48+10%H-51+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example50	ITO/CuPc(10)/NPD(50)/80%H-51+10%H-56+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example51	ITO/CuPc(10)/NPD(50)/80%H-66+10%H-70+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.90%	66h
Additional Comparative Example52	ITO/CuPc(10)/NPD(50)/80%CBP+10%H-70+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	6.00%	700h
Additional Comparative Example53	ITO/CuPc(10)/NPD(50)/80%CBP+10%H-51+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example54	ITO/CuPc(10)/NPD(50)/80%CBP+10%H-52+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	

		External quantum efficiency	Operation durability @500cd/m
Additional Example2	ITO/CuPc(10)/NPD(50)/85.9%CBP+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	7.00%	2800h
Additional Comparative Example55	ITO/CuPc(10)/NPD(50)/85.9%H-34+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.10%	51h
Additional Comparative Example56	ITO/CuPc(10)/NPD(50)/85.9%H-4+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example57	ITO/CuPc(10)/NPD(50)/85.9%H-5+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.10%	41h
Additional Comparative Example58	ITO/CuPc(10)/NPD(50)/85.9%H-7+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example59	ITO/CuPc(10)/NPD(50)/85.9%H-8+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.20%	26h
Additional Comparative Example60	ITO/CuPc(10)/NPD(50)/85.9%H-10+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example61	ITO/CuPc(10)/NPD(50)/85.9%H-15+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example62	ITO/CuPc(10)/NPD(50)/85.9%H-20+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.10%	31h
Additional Comparative Example63	ITO/CuPc(10)/NPD(50)/85.9%H-23+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.10%	42h
Additional Comparative Example64	ITO/CuPc(10)/NPD(50)/85.9%H-30+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example65	ITO/CuPc(10)/NPD(50)/85.9%H-31+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example66	ITO/CuPc(10)/NPD(50)/85.9%CBP+8.5%H-34+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.10%	190h
Additional Comparative Example67	ITO/CuPc(10)/NPD(50)/85.9%CBP+8.5%H-4+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example68	ITO/CuPc(10)/NPD(50)/85.9%CBP+8.5%H-7+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example69	ITO/CuPc(10)/NPD(50)/85.9%CBP+8.5%H-23+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.30%	100h
Additional Comparative Example70	ITO/CuPc(10)/NPD(50)/85.9%H-40+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.60%	112h
Additional Comparative Example71	ITO/CuPc(10)/NPD(50)/85.9%H-47+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.30%	45h
Additional Comparative Example72	ITO/CuPc(10)/NPD(50)/85.9%H-50+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.20%	30h
Additional Comparative Example73	ITO/CuPc(10)/NPD(50)/85.9%H-51+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example74	ITO/CuPc(10)/NPD(50)/85.9%H-52+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example75	ITO/CuPc(10)/NPD(50)/85.9%H-56+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example76	ITO/CuPc(10)/NPD(50)/85.9%H-66+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.40%	75h
Additional Comparative Example77	ITO/CuPc(10)/NPD(50)/85.9%H-67+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.40%	86h
Additional Comparative Example78	ITO/CuPc(10)/NPD(50)/85.9%H-101+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	1.20%	45h
Additional Comparative Example79	ITO/CuPc(10)/NPD(50)/85.9%H-104+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	1.20%	70h
Additional Comparative Example80	ITO/CuPc(10)/NPD(50)/85.9%H-118+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example81	ITO/CuPc(10)/NPD(50)/85.9%H-139+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example82	ITO/CuPc(10)/NPD(50)/85.9%H-148+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example83	ITO/CuPc(10)/NPD(50)/85.9%H-132+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example84	ITO/CuPc(10)/NPD(50)/85.9%H-137+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example85	ITO/CuPc(10)/NPD(50)/85.9%H-202+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.10%	3h
Additional Comparative Example86	ITO/CuPc(10)/NPD(50)/85.9%H-204+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.50%	10h
Additional Comparative Example87	ITO/CuPc(10)/NPD(50)/85.9%H-213+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example88	ITO/CuPc(10)/NPD(50)/85.9%BCP+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example89	ITO/CuPc(10)/NPD(50)/85.9%OXD-7+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example90	ITO/CuPc(10)/NPD(50)/85.9%TAZ+8.5%TPBI+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example91	ITO/CuPc(10)/NPD(50)/85.9%CBP+8.5%BCP+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	1.30%	450h
Additional Comparative Example92	ITO/CuPc(10)/NPD(50)/85.9%CBP+8.5%OXD-7+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example93	ITO/CuPc(10)/NPD(50)/85.9%CBP+8.5%TAZ+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example94	ITO/CuPc(10)/NPD(50)/85.9%TAZ+8.5%BCP+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example95	ITO/CuPc(10)/NPD(50)/85.9%OXD-7+8.5%BCP+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example96	ITO/CuPc(10)/NPD(50)/85.9%H-10+8.5%BCP+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example97	ITO/CuPc(10)/NPD(50)/85.9%H-10+8.5%OXD-7+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example98	ITO/CuPc(10)/NPD(50)/85.9%H-10+8.5%TAZ+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example99	ITO/CuPc(10)/NPD(50)/85.9%H-34+8.5%BCP+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.10%	30h
Additional Comparative Example100	ITO/CuPc(10)/NPD(50)/85.9%H-34+8.5%OXD-7+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example101	ITO/CuPc(10)/NPD(50)/85.9%H-34+8.5%TAZ+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example102	ITO/CuPc(10)/NPD(50)/85.9%H-42+8.5%H-43+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example103	ITO/CuPc(10)/NPD(50)/85.9%H-48+8.5%H-51+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example104	ITO/CuPc(10)/NPD(50)/85.9%H-51+8.5%H-56+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example105	ITO/CuPc(10)/NPD(50)/85.9%H-66+8.5%H-70+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	0.90%	70h
Additional Comparative Example106	ITO/CuPc(10)/NPD(50)/85.9%CBP+8.5%H-70+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	6.00%	850h
Additional Comparative Example107	ITO/CuPc(10)/NPD(50)/85.9%CBP+8.5%H-51+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	
Additional Comparative Example108	ITO/CuPc(10)/NPD(50)/85.9%CBP+8.5%H-52+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	No light emission	

		External quantum efficiency	Operation durability @500cd/m	
Example8	ITO/CuPc(10)/NPD(50)/85.9%CBP+8.5%ET-2+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	7	3000	
Additional Example3	ITO/CuPc(10)/NPD(50)/85.9%CBP+8.5%ET-2+5.6%Iir(4,6-F2ppy)2acac(36)/ET-2(36)/LiF/Al	8.00%	2100h	UDC phosphorescent material disclosed in WO2002/015645 (cited on page 33 of the present spec.)
Additional Example4	ITO/CuPc(10)/TPD(50)/85.9%CBP+8.5%ET-2+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	8%	2500h	TPD is used for hole transporting layer
Additional Example5	ITO/CuPc(10)/TPD(50)/85.9%CBP+8.5%ET-2+5.6%Ir(ppy)3(36)/Ba l q (36)/LiF/Al	6.50%	2900h	Balq is used for electron transporting layer
Additional Example6	ITO/CuPc(10)/NPD(50)/85.9%CBP+8.5%ET-2+5.6%Ir(ppy)3(36)/ET-2(36)/Mg : Ag	7.70%	2900h	Cathode is changed to MgAg
Additional Example7	ITO/CuPc(10)/NPD(50)/85.9%C-17+8.5%ET-1+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	6.80%	1800h	Combination of hosts is changed
Additional Example8	ITO/CuPc(10)/NPD(50)/85.9%C-12+8.5%C-20+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	7.50%	1900h	Combination of hosts is changed
Additional Example9	ITO/CuPc(10)/NPD(50)/85.9%A-10+8.5%A-8+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	9.50%	1800h	Combination of hosts is changed
Additional Example10	ITO/CuPc(10)/NPD(50)/85.9%A-10+8.5%B-10+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	9.00%	2750h	Combination of hosts is changed
Additional Example11	ITO/CuPc(10)/NPD(50)/85.9%A-10+8.5%B-68+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	8%	2500h	Combination of hosts is changed
Additional Example12	ITO/CuPc(10)/NPD(50)/85.9%A-10+8.5%A-28+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	6.90%	2400h	Combination of hosts is changed
Additional Example13	ITO/CuPc(10)/NPD(50)/85.9%A-10+8.5%C-20+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	7%	2300h	Combination of hosts is changed
Additional Example14	ITO/CuPc(10)/NPD(50)/85.9%C-12+8.5%B-10+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	7.40%	2600h	Combination of hosts is changed
Additional Example15	ITO/CuPc(10)/NPD(50)/85.9%C-17+8.5%B-10+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	6.90%	2500h	Combination of hosts is changed
Additional Example16	ITO/CuPc(10)/NPD(50)/85.9%CBP+8.5%B-10+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	7.40%	3000h	Combination of hosts is changed
Additional Example17	ITO/CuPc(10)/NPD(50)/89.9%C-17+4.5%ET-1+10%Ir(ppy)3(36)/ET-2(36)/LiF/Al	6.90%	1700h	Combination of hosts is changed and concentration is changed
Additional Example18	ITO/CuPc(10)/NPD(50)/89.9%C-12+4.5%C-20+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	7.00%	1800h	Combination of hosts is changed and concentration is changed
Additional Example19	ITO/CuPc(10)/NPD(50)/89.9%A-10+4.5%A-8+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	7.00%	1850h	Combination of hosts is changed and concentration is changed
Additional Example20	ITO/CuPc(10)/NPD(50)/89.9%A-10+4.5%B-10+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	6.70%	2100h	Combination of hosts is changed and concentration is changed
Additional Example21	ITO/CuPc(10)/NPD(50)/89.9%A-10+4.5%B-68+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	7.10%	2350h	Combination of hosts is changed and concentration is changed
Additional Example22	ITO/CuPc(10)/NPD(50)/89.9%A-10+4.5%A-28+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	5.90%	2400h	Combination of hosts is changed and concentration is changed
Additional Example23	ITO/CuPc(10)/NPD(50)/89.9%A-10+4.5%C-20+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	6.40%	2000h	Combination of hosts is changed and concentration is changed
Additional Example24	ITO/CuPc(10)/NPD(50)/89.9%C-12+4.5%B-10+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	6.30%	2100h	Combination of hosts is changed and concentration is changed
Additional Example25	ITO/CuPc(10)/NPD(50)/89.9%C-17+4.5%B-10+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	7.80%	1950h	Combination of hosts is changed and concentration is changed
Additional Example26	ITO/CuPc(10)/NPD(50)/89.9%CBP+4.5%B-10+5.6%Ir(ppy)3(36)/ET-2(36)/LiF/Al	6.70%	1900h	Combination of hosts is changed and concentration is changed